tracks facility repairs and cost estimates. The handheld also handles project documentation, such as project specifications, industry specifications, and drawing logs, among others.

The system is an integrated program management system where the processes for planning process, designing and constructing operations share the same information. The system can also perform program management where a large construction program can have a plurality of projects within that program. The system can manage the process of planning long range budget plans and after the plans have been approved, the system can specify for a particular year the projects that are in a design phase where an architect or engineering firm performs initial site feasibility studies, performs the design work so that the project can receive bids from construction companies. The system can also provide project tracking on a day to day basis. The tracking can be done using an inspection system field notebook system that tracks the progress of the project on a day to day basis as well as values that are paid to the contractor so that correct intermediate progress payments can be made for a particular project.

The system is as easy to use as the pen and paper approach and provides information integration advantages, including the ability to capture data from scanners, barcode readers, or the Internet. Furthermore, as portable computers are typically deployed in field applications by service providers where employees are scattered over a wide geographic area, the information advantages arising from integrating data collected from handheld computers include an ability to link information generated at the client's site with follow-up discussions and letters necessary to close the transaction enhances the efficiency of field personnel. The handheld computer is small and inexpensive. Thus, field personnel can perform data collection without carrying a relatively bulky laptop or notebook computer.

Other advantages of the invention may include one or more of the following. The system provides an efficient, integrated system for keeping track of job details that are constantly changing. The management of proposal submittals becomes convenient. Further, the tracking submittal responses or approvals is streamlined. The submittals, transmittals, change orders, request for information, meeting minutes, daily reports, activity logs, and other job related documents are organized and instantly searchable. The system enables information related to a building production to be managed unitarily by making use of a computer and to properly transmit production information generated at each stage of the production to the next process. The field-based project managers can be constantly in touch with the main office via phone, fax, or courier to ensure that their job information is accurate and up-to-date. Production and cost information from the system can be sent directly to the accounting staff for entry into the job costing and accounting software. Further, the system avoids requiring duplicate entries to be made.

BRIEF DESCRIPTION OF THE DRAWINGS

Figs. 1A-1B are processes associated with a field inspection system.

Fig. 2 is a diagram illustrating a networked computer system for handling an integrated construction management system.

Fig. 3 is a diagram illustrating major modules associated with an integrated construction management system.

Fig. 4 is a diagram illustrating a system for handling information updates from field personnel.

Fig. 5 is a diagram illustrating a planning-design-construction process flow.

Fig. 6 is a diagram illustrating processing of a capital improvement plan.

Figs. 7a-7c are flowcharts illustrating two design phases.

Fig. 8 is a diagram illustrating one sequence of processing data in an integrated construction management system.

Fig. 9 is a diagram of an exemplary handheld computer to collect field data.

Fig. 10 is a flowchart illustrating operations performed on the handheld computer of Fig. 9.

Description

Referring now to Figs. 1A-1B, processes to perform field inspection are shown. The process 10 supports field data capture using a handheld computer 3 that includes a camera 5 to capture video and a sketchpad to capture a sketch. The process 10 also supports communications between a server 2 and the handheld computer 3.